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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy									DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 3: Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603758N: Navy Warfighting Exp & Demo							
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	51.115	49.996	51.819	-	51.819	56.200	54.184	73.660	75.093	Continuing	Continuing
2918: Navy Warfighting Experiments and Demo	51.115	49.996	51.819	-	51.819	56.200	54.184	73.660	75.093	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the development of recent technology breakthroughs to meet current operational needs from a subscale proof-of-principle into a full-scale prototype for warfighter experimentation during laboratory and operational demonstrations, Fleet Battle Experiments (FBE), Limited Objective Experiments (LOEs) and Sea Trial Exercises. The key aspects of this PE are divided into four areas: (1) SwampWorks develops and demonstrates newly invented or recently discovered technologies that address emergent and enduring operational problems in an accelerated timeframe; (2) Naval Warfare Experimentation develops prototypes of recent technology breakthroughs and provides them to the warfighter for experimentation during FBEs, LOEs or Sea Trials; (3) Tech Solutions develops rapid response science and technology prototypes addressing Fleet/Force needs identified by Sailors and Marines at the deckplate level; and (4) Operations Analysis provides the Navy and Marine Corps the means to identify capability needs that can be addressed with science and technology solutions, and (5) Manufacturing Technology Science and Technology (S&T) to accelerate recently discovered manufacturing technologies to reduce the acquisition and ownership costs of current and future platforms.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	53.177	50.157	53.447	-	53.447
Current President's Budget	51.115	49.996	51.819	-	51.819
Total Adjustments	-2.062	-0.161	-1.628	-	-1.628
• Congressional General Reductions	-	-0.161			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.015	-			
• SBIR/STTR Transfer	-1.796	-			
• Program Adjustments	-	-	-2.119	-	-2.119
• Rate/Misc Adjustments	-	-	0.491	-	0.491
• Congressional General Reductions Adjustments	-0.281	-	-	-	-

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<u>Change Summary Explanation</u> Technical: Not applicable. Schedule: Not applicable.		

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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
2918: Navy Warfighting Experiments and Demo	51.115	49.996	51.819	-	51.819	56.200	54.184	73.660	75.093	Continuing	Continuing
A. Mission Description and Budget Item Justification											
This project focuses on the development of recent technology breakthroughs to meet current operational needs from a subscale proof-of-principle into a full-scale prototype for warfighter experimentation during laboratory and operational demonstrations, FBE, LOEs and Sea Trial Exercises.											
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2011	FY 2012	FY 2013	
Title: NAVAL WARFARE EXPERIMENTATION								18.900	19.789	19.200	
Description: The objective of this project is to capitalize on recent technology breakthroughs to develop prototypes quickly and provide them to the warfighter for experimentation during laboratory and operational demonstrations, Sea Trials or LOEs. Current efforts include experimentation with electronics warfare (EW) technologies, development and demonstration of real time situational awareness technologies, power and energy for unmanned vehicles, technology investigation studies, advanced submarine controls, and jet fuel from seawater.											
FY 2011 Accomplishments:											
- Continued concept based technology program efforts.											
- Continued experimentation efforts with technologies developed in SwampWorks/Tech Solutions.											
- Continued to identify promising technology breakthroughs that can be prototyped and delivered to the warfighter for experimentation.											
- Continued development and demonstration of real time situational awareness technologies.											
- Continued Ship Affordability program to examine ship designs and construction processes and develop technologies that can significantly reduce the costs to conceive, design and construct naval ships.											
- Continued effort to develop and demonstrate integrated intelligence, surveillance, observation, and navigation technologies into a common operation picture accessible throughout the U.S. Government.											
- Continued technology experimentation for Total Ownership Cost (TOC) reduction.											
- Completed DDG-51 fuel efficient power & propulsion demonstrator effort.											
- Completed and completed Maritime Domain Awareness (MDA) augmentation.											
- Completed development of network attack option models for near real time forensics and social network mapping.											
- Initiated efforts to develop and demonstrate technologies to meet current or emerging operational needs.											
FY 2012 Plans:											
- Continue all FY 2011 efforts, less those noted as complete above.											

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012	FY 2013
- Initiate efforts to experiment and demonstrate technologies to meet current or emerging operational needs.				
FY 2013 Plans: - Continue all FY 2012 efforts, less those noted as complete above. - Initiate efforts to experiment and demonstrate technologies to meet current or emerging operational needs.				
Title: OPERATIONS ANALYSIS Description: The objective of this project is to provide operational analysis through studies, analyses, gaming and experimentation to identify Navy and Marine Corps capability needs that can be addressed with Science and Technology (S&T) solutions. The effort includes core analysis of S&T programs, military utility/capability gaps analyses, war gaming, structured experimentation events, the articulation of the results of that analysis and wargaming, and the development of innovation strategies and messages resulting from these analyses. Recent work includes development and execution of an Electromagnetic Railgun Innovative Naval Prototype (INP) Simulation Experiment (SIMEX); participation in additional SIMEX design, data collection and analysis events; wargame design in support of the ONR Office of Innovation; analytical, strategic planning, and wargaming support; organizing and conducting workshops and symposia that increase innovation outreach; and participating in Red Teaming and conceptual analysis. FY 2011 Accomplishments: - Continued to conduct Military Utility Analyses of Future Naval Capability technologies. - Continued to conduct capability gaps analyses to identify areas that can be addressed with products from the S&T portfolio. - Continued to conduct SIMEX development, execution, data collection and analysis. - Continued to conduct wargame design in support of the ONR Office of Innovation. . FY 2012 Plans: - Continue all FY 2011 efforts. FY 2013 Plans: - Continue all FY 2012 efforts.		2.767	2.694	2.726
Title: SWAMPWORKS Description: SwampWorks seeks to develop and demonstrate technologies that address emergent and enduring operational problems in an accelerated timeframe. Some of these technologies may end up in the hands of the warfighter for experimentation, or may culminate in a significant exercise that demonstrates capability then transitions into the Acquisition Program of Record (POR). Examples of recent successes are DDG-51 energy storage, transportable electronic warfare module, high temperature superconducting degaussing, submarine electric actuator, and structural acoustics detection and classification. Examples of		20.210	17.900	18.484

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012
current efforts include energy storage and reduced energy consumption technologies, robotic damage control; carbon nanotube, effective active acoustics simulation, power and energy for unmanned vehicles, and technology investigation studies.			
The increase in funding in FY 2011 is due to an increased emphasis in developing and demonstrating technologies that address emergent and enduring operational problems in an accelerated timeframe. Among the efforts pursued during FY 2011 are advanced development of DC power components and systems for shipboard applications; development of advanced unmanned systems; development of advanced technologies for the new generation of DDG-51; increased emphasis on electronic warfare, reduction of Total Ownership Costs (TOC), and autonomy capabilities; and rapid development of advanced technologies that directly support Navy priorities due to shifting theatres of operation.			
The funding level decreases from FY 2011 to FY 2012 are the result of POM-12 refresh of ONR Leap Ahead portfolio as approved by DON S&T Corporate Board. This reduces the program's capability to engage in planned high risk technology development for direct warfighter support.			
FY 2011 Accomplishments:			
<ul style="list-style-type: none"> - Continued to identify enduring and emergent operational barriers identified by naval leadership and responded with relevant technology developments and demonstrations. - Continued novel heavy fuel propulsion system development. - Continued disruptive commercial technology studies at varied military, government, and educational institutions. - Initiated exploration of technologies to address emergent EW threats for surface and air platforms. - Initiated high risk/high payoff projects to explore significant reduction in TOC. - Initiated efforts to develop technologies to meet current or emerging operational needs. - Initiated investment in submarine control surface technologies to provide improved maneuvering capabilities and drastically reduce TOC. Programs include but are not limited to the Virginia class, and Ohio Class replacement programs. - Initiated investment in advanced electronic warfare technologies; projects are expected to be classified at a higher level. - Initiated investments in technologies to reduce TOC for the new generation of DDG-51 vessels. - Initiated investment in technologies to improve the new DDG-51, with specific focus on advanced propulsion, and power generation and distribution. 			
FY 2012 Plans:			
<ul style="list-style-type: none"> - Continue all FY 2011 efforts. - Initiate efforts to develop and demonstrate technologies to meet current or emerging operational needs. 			
FY 2013 Plans:			
<ul style="list-style-type: none"> - Continue all FY 2012 efforts. 			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012	FY 2013
- Initiate efforts to develop and demonstrate technologies to meet current or emerging operational needs.				
Title: TECH SOLUTIONS Description: Tech Solutions develops rapid response S&T solutions to immediate Fleet/Force needs identified by individual warfighters at the deckplate level. Sailors, Marines and Science Advisors submit their issues throughout the year via the Tech Solutions website, email, phone, or chain of command. Projects are initiated as requests come in and are completed in approximately twelve to eighteen months. Examples of recent successes are (1) the Talon Explosive Ordnance Disposal (EOD) Robot Battery Module which transitioned to the Joint EOD Robotics program office and is expected to save ~\$4.6M over six years; (2) new web-based Food Service Management software for Navy-wide use; (3) new solid-state lighting fixtures approved for submarines. FY 2011 Accomplishments: - Developed, demonstrated and delivered technical solution prototypes to all projects identified in the previous fiscal year. - Initiated development of projects that provide solutions to problems identified by Science Advisors and the Fleet/Force to address emergent critical needs. FY 2012 Plans: - Develop, demonstrate and deliver technical solutions to all projects identified in the previous fiscal year. - Initiate development of projects that provide solutions to problems identified by Science Advisors and the Fleet/Force to address emergent critical needs. FY 2013 Plans: - Develop, demonstrate and deliver technical solution prototypes to all projects initiated in the previous fiscal year. - Initiate development of projects that provide solutions to problems identified by Science Advisors and the Fleet/Force to address emergent critical needs.		9.238	9.613	9.507
Title: MANUFACTURING TECHNOLOGY S&T Description: The Manufacturing Technology Science and Technology (S&T) program accelerates recently discovered manufacturing technologies to reduce the acquisition and ownership costs of current and future platforms which assists in meeting performance and platform affordability goals - both acquisition and life-cycle. This supports a critical goal of the Navy, meeting the affordability goals of major acquisition platforms, by accelerating emerging manufacturing technology. Funding does not begin until FY 2013. FY 2013 Plans:		-	-	1.902

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012
- Initiate/accelerate recently discovered manufacturing technologies to reduce the acquisition and ownership costs of current and future platforms.			
Accomplishments/Planned Programs Subtotals		51.115	49.996
C. Other Program Funding Summary (\$ in Millions) N/A			
D. Acquisition Strategy Not applicable.			
E. Performance Metrics Overall metric goals are to transition the 6.3 advanced technology projects into acquisition programs of record, demonstrate successful technologies to enable new operational concepts, and enable the production of technology products such as proofs of concept and manufacturing packages. The performance of the work funded in this PE is reviewed at several levels to ensure that the investment is relevant and productive. At the macroscopic level, the investment is coordinated with Navy Warfare Development Command and Commander, Fleet Forces Command to address the goals and objectives identified for Sea Trials and LOEs. At the microscopic level, the work funded in this PE is reviewed periodically by the Program Manager to ensure the investment is meeting the goals defined for each project. This review includes feedback collected from the warfighter community on all Sea Trials and LOEs to support the Program Manager's assessment of the value and relevance of each investment. Furthermore, the entire program is reviewed yearly by the Chief of Naval Research.			